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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,932	10/31/2005	David Michael Doddrell	UNI-116 US	2837
23520	7590	09/28/2006	EXAMINER	
MAURICE M KLEE 1951 BURR STREET FAIRFIELD, CT 06824			FETZNER, TIFFANY A	
			ART UNIT	PAPER NUMBER
			2859	

DATE MAILED: 09/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/525,932	Applicant(s) DODDRELL ET AL.	
	Examiner Tiffany A. Fetzner	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to because component **S11** taught on **page 8 in lines 29 and 31** of the original disclosure is not present in **Figures 9A to 9D**. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
A) Component S11 taught on page 8 in lines 29 and 31 of the original disclosure is not present in **Figures 9A to 9D**. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1-18** are rejected under **35 U.S.C. 102(e)** as being anticipated by **Visser et al.**, US patent 6,870,368 B2 issued March 22nd 2005, filed February 5th 2002.

6. With respect to **Claim 1**, **Visser et al.**, teaches and shows "A radio frequency (RF) coil array for use in resonance imaging and/or analysis of a subject located within a space in which a magnetic field is operatively applied in a first direction" [See figures 2 through 6; the abstract, col. 2 line 7 through col. 6 line 23 where the chosen SENSE, direction may be arbitrary depending on the type of examination desired within three-dimensional space.] **Visser et al.**, shows in figures 2, 3, and 4 "the coil array comprising a plurality of coil elements angled relative to each other and electrically separate from each other" (i.e. each coil has its own electrical connection as indicated by the dashed line from each of the RF coil components 9, 10, 11, and 12, which feed into the individually separate (i.e. parallel) pre-amplifier 50, and phase-shifter 51 for each respective coil 9, 10, 11 and 12) [See also col. 4 lines 21 through col. 5 line 28.], "each coil element" (i.e. coils 9, 10, 11, and 12) "having a pair of main conductors extending generally parallel to the direction of the magnetic field and located on opposite sides of the space" [See figures 2, 3, 4 and 6] "and a pair of connection conductors" (i.e. the dashed electrical connection lines from each of the respective coils 9, 10, 11, and 12 of figures 2, 3, or 4; or alternatively the dashed electrical connection lines from each of the respective coils 21 through 28 of figures 6, 7, and 5) which are "connected between respective ends of the main conductors". [See figures 2 through 7.]

7. With respect to **Claim 2**, **Visser et al.**, shows from figures 2 through 6 that "the space is a cylindrical space and the main conductors extend axially and are located diametrically opposite each other." [See figures 2 through 6.] The same reasons for rejection, which apply to **claim 1** also apply to **claim 2** and need not be reiterated.

8. With respect to **Claim 3, Visser et al.**, shows from figures 2 through 6 that “the coil elements are angularly spaced about the axis of the cylindrical space, and are each located in a respective diametric plane of the cylindrical space.” [See figures 2 through 6.] The same reasons for rejection, which apply to **claims 1, 2** also apply to **claim 3** and need not be reiterated.

9. With respect to **Claim 4, Visser et al.**, shows from figures 2 through 4 that “the coil elements” (i.e. 9, 10, 11, and 12) “are equi-angularly spaced, the angle between adjacent coils being $360/N$, where N is the number of coil elements in the array”. [See figures 2 through 4.] The same reasons for rejection, which apply to **claims 1, 2, 3** also apply to **claim 4** and need not be reiterated.

10. With respect to **Claim 5, Visser et al.**, shows from figures 2 through 4 that “at least one connection conductor” [See the dashed electrical connection line of figures 2 through 4] which “extends around the periphery of the cylindrical space at a respective axial end thereof to thereby permit access to the cylindrical space through that end.” [See figures 2 through 4.] The same reasons for rejection, which apply to **claims 1, 2**, also apply to **claim 5** and need not be reiterated.

11. With respect to **Claim 6, Visser et al.**, shows from figures 2 through 7 that “the coil elements are arranged in one or more orthogonal pairs.” [See figures 2 through 4.] The same reasons for rejection, which apply to **claims 1, 2**, also apply to **claim 6** and need not be reiterated.

12. With respect to **Claim 7, Visser et al.**, teaches and shows a “Resonance imaging apparatus” [See col. 1 lines 8-20] “comprising a space for receiving a subject to be imaged,” [See figures 2 through 4, and the intrinsic imaging space within the coils of figures 5 and 6.] “magnet means for applying a magnetic field to the space in a first direction, and a radio frequency (RF) coil array” [See col. 1 lines 8-20, figures 2 through 6] “comprising a plurality of angularly spaced coil elements, each coil element having a pair of main conductors extending generally parallel to the direction of the magnetic field and located on opposite sides of the space, and a pair of connection conductors connected between respective ends of the main conductors.” [See figures 2 through 6, the **rejection of claim 1** above, as well as the dashed electrical connection line of

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figures 2 through 4.] The same reasons for rejection, which apply to **claims 1, 2**, also apply to **claim 7** and need not be reiterated.

13. With respect to **Claim 8, Visser et al.**, shows from figures 2 through 6 that “the space is a cylindrical space and the main conductors extend axially and are located diametrically opposite each other.” [See figures 2 through 6.] The same reasons for rejection, which apply to **claims 1, 2, 7**, also apply to **claim 8** and need not be reiterated.

14. With respect to **Claim 9, Visser et al.**, shows from figures 2 through 6 that “the coil elements are angularly spaced about the axis of the cylindrical space, and are each located in a respective diametric plane of the cylindrical space.” [See figures 2 through 6.] The same reasons for rejection, which apply to **claims 1, 2, 3, 7, 8** also apply to **claim 9** and need not be reiterated.

15. With respect to **Claim 10, Visser et al.**, shows from figures 2 through 4 that “the coil elements” (i.e. 9, 10, 11, and 12) “are equi-angularly spaced, the angle between adjacent coils being $360/N$, where N is the number of coil elements in the array”. [See figures 2 through 4.] The same reasons for rejection, which apply to **claims 1, 2, 3, 4, 7, 8, 9** also apply to **claim 10** and need not be reiterated.

16. With respect to **Claim 11, Visser et al.**, shows from figures 2 through 4 that “at least one connection conductor” [See the dashed electrical connection line of figures 2 through 4] which “extends around the periphery of the cylindrical space at a respective axial end thereof to thereby permit access to the cylindrical space through that end.” [See figures 2 through 4.] The same reasons for rejection, which apply to **claims 1, 2, 7, 8**, also apply to **claim 11** and need not be reiterated.

17. With respect to **Claim 12, Visser et al.**, shows from figures 2 through 7 that “the coil elements are arranged in one or more orthogonal pairs.” [See figures 2 through 4.] The same reasons for rejection, which apply to **claims 1, 2, 7, 8** also apply to **claim 12** and need not be reiterated.

18. With respect to **Claim 13, Visser et al.**, shows from figures 2 through 7 and teaches that “each coil is used as a receiver coil, the apparatus further comprising a plurality of receiver channels each connected to a respective coil,” [See col. 1 lines 40-

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46 with col. 1 lines 8-20; col. 4 line 20 through col. 5 line 29] “and means for combining the signals” [See component 53 in figures 2 through 7] “from each coil to form a composite image”. [See col. 1 line 8 through col. 6 line 29 as this is one of the main limitations taught throughout the **Visser et al.**, reference.] The same reasons for rejection, which apply to **claims 1, 7**, also apply to **claim 13** and need not be reiterated.

19. With respect to **Claim 14**, **Visser et al.**, teaches that “at least one coil is **adapted to be used as both a transmitter and receiver coil.**” [See col. 1 lines 8-20.] The same reasons for rejection, which apply to **claims 1, 7**, also apply to **claim 14** and need not be reiterated.

20. With respect to **Claim 15**, **Visser et al.**, teaches and shows that “the coil elements” (i.e. 9, 10, 11, 12; or 21 through 28) are arranged in one or more orthogonal pairs,” [See figures 2 through 6] “one coil element in each pair being **adapted** for use as a transmitter coil and the other coil element in each pair being adapted for use as a receiver coil”, [See col. 1 lines 8-20 where each coil can be used to transmit or induce MR dipoles and then receive RF signals from the dipoles in the examination region. Therefore each coil element may functionally both transmit and receive as needed in performing an MRI scan.] The ability of “each orthogonal pair being sequentially active”, or simultaneously active as selected is taught from col. 6 lines 16-30; col. 4 lines 21-46; col. 32 lines 46-51 where not all of the coils need to be active, and co. 1 lines 21-55] “the apparatus further comprising a receiver channel and switching means” [See the switches of figures 2 through 8] “for selectively connecting the receiver channel sequentially” (i.e. when at least one of the coils is not selected, obtaining images from all of the coils, necessitates a sequential acquisition in time of at least two MRI scans) “to the receiver coil of the active orthogonal pair”. [See figures 2 through 8; and col. 1 line 8 through col. 6 line 30 as the complete selectability of any signal path from any individual receive coil, which may be combined with one or more signals from a different coil is the main novel inventive feature of the **Visser et al.**, reference. The same reasons for rejection, which apply to **claims 1, 7**, also apply to **claim 15** and need not be reiterated.

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21. With respect to **Claim 16**, the presence of the independent phase shifter components 51 and independent pre-amplified components 50, for each individual coil in figures 2, 3, 4, and 7 shows that "each transmitter" / receiver "coil" (i.e. coils 9, 10, 11, 12 and 21-28); "of each orthogonal pair" [See figures 2 through 7] "is adapted to generate a radio frequency pulse of different amplitude and phase to the transmitter coil(s) of the other orthogonal pair(s)." [See also the teachings of col. 1 lines 8-20]. The same reasons for rejection, which apply to **claims 1, 7, 15** also apply to **claim 16** and need not be reiterated.

22. With respect to **Claim 17, Visser et al.**, shows from figure 8, components 31, 32, which connect to components 30, and 40; along with the components of figures 2 through 6 "A rotary switched RF coil array arrangement for combined" independent (i.e. "parallel") "imaging of a subject located in a cylindrical space, the coil array arrangement comprising a plurality of separate coils spaced angularly about the axis of the cylindrical space, each coil including a pair of main conductors extending axially on diametrically opposite sides of the cylindrical space, a receiver channel, and switching means for selectively connecting the receiver channel sequentially to the coils." [See col. 1 line 8 through col. 6 line 30; the abstract, and figures 2 through 6.] The same reasons for rejection, which apply to **claims 1, 7, 15** also apply to **claim 17** and need not be reiterated.

23. With respect to **Claim 18, Visser et al.**, shows from figures 2 through 4 that "each coil has a pair of connection conductors connected between respective ends of the main conductors, the connection conductors at one or both ends being non-diametrical to permit access through the respective axial end of the cylindrical space." [See figures 2 through 4.] The same reasons for rejection, which apply to **claims 1, 7, 15, 17** also apply to **claim 18** and need not be reiterated.

24. **Claims 1-18** are also rejected under **35 U.S.C. 102(e)** as being anticipated by **Visser et al.**, US patent application publication **2002/0125888 A1** published **September 12th 2002**, filed February 5th 2002. This reference corresponds to the applied **Visser et al.**, US patent 6,870,368 B2 applied above. Therefore a further detailed listing of the

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same corresponding teachings and figures is considered to be redundant and unnecessary.

Conclusion

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

26. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.

27. Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PMR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PMR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TAF

September 22, 2006



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